THE STATUS OF WATERFOWL CONSERVATION

A Contribution from the Wilson Ornithological Society Conservation Committee

The effort to protect waterfowl from excessive hunting and to preserve essential habitat to meet seasonal needs has been moving at an ever-increasing tempo. Recently, attention has been directed toward providing space on which the public may enjoy waterfowl hunting and observation. The objective of this report is an appraisal of accomplishments.

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HABITAT MANAGEMENT

Behavioral characteristics of waterfowl dictate that acceptable habitat must be available for breeding, migration, and wintering. Deficiencies in any of the three functional types of habitat, but especially breeding and wintering areas, can depress populations and/or create more complex management problems. However, recognizing that sizable investments have already been made in migration and wintering habitat, the greatest need for habitat expansion now is believed to center on the breeding grounds. Unless a sufficient volume of birds is produced, present and future demands of hunters and nonhunters will not be met, and populations on migration and wintering areas will be disappointing.

Breeding Habitat.—Not all aquatic habitat provides the essential features to satisfy the needs and preferences of waterfowl during the breeding season. The region most productive of ducks and coots is the "Prairie Pothole Region." It extends over an area of 217,000 square miles in south central Canada and the northern Great Plains in the United States (U.S. Fish and Wildlife Service, 1953:3). Included in it are 161,000 square miles in Canada (Alberta, Saskatchewan, and Manitoba) and 56,000 square miles in the United States (North Dakota, South Dakota, and Minnesota).

Specific figures on the number and acreage of wetlands important for breeding waterfowl are unavailable for the entire pothole region. In Canada, wetland inventories are in initial planning or operational stages. Estimates for the U.S. portion in the mid-1950's showed 1,210,000 wetland depressions totaling 4,450,000 acres. Within the 91 key counties in the tri-state area of North Dakota, South Dakota, and Minnesota, an estimated 2,820,000 acres of prime duck and coot production habitat were present. This 91-county area contains the last extensive, top-quality, natural breeding habitat in the United States.

The importance of this pothole area is indicated by waterfowl population figures obtained between 1950–57. Approximately one-half (53 per cent) of the continental duck supply was produced in the North American Prairie Pothole Region (Hawkins *et al.*, 1958). The U.S. portion of this region contributed about 14 per cent of the total production.

Nonpothole type of breeding habitat exists as separate segments in an area upwards of one and one-half million square miles, largely in Canada. These remote and comparatively stable aquatic areas accommodated slightly under 47 per cent of the total breeding duck population in the 1950's. In addition to producing over 80 per cent of the continent's duck supply, Canada also produces the bulk of the coots and geese.

Demands for waterfowl already exceed existing populations. Thus, management's task is to maintain the existing volume of flights and to increase them where possible. In North America, maintenance of the numerous, small, shallow depressions accommodating breeding ducks and coots constitutes the most challenging issue faced by waterfowl managers. The potholes exist in a matrix of soils developed for an agricultural economy. In cropland areas these small wetlands impede tillage with modern machinery and are considered a nuisance. Consequently, land-owners are converting the bothersome wet areas to cropland by draining and filling. This destruction is in an initial stage in Canada. In the United States it is in a final stage. The ducks are caught in a familiar squeeze where the actions of individuals eliminate public resources or values as they develop land to maximize economic returns. Unfortunately, individual choices in land developments usually do not recognize public or national values.

A controversial issue in the United States resolves itself around the fact that technical assistance and cost-sharing are provided by the government to accomplish drainage. The rate of loss of these extremely valuable duck and coot producing areas is accelerated by these incentives.

To date, losses of potholes have exceeded preservation efforts. The magnitude of subtractions are indicated by the following examples. Historically, the prairie pothole area in the U.S. covered 115,000 square miles. Man, largely through drainage, has practically removed all potholes in slightly more than one-half of the area (an estimated 56,000 square miles remained in the early 1950's). Within the remaining portion, federally assisted drainage—not counting locally financed projects—claimed 256,700 acres of prairie duck habitat between 1951 and 1955 (Reuss, 1958:3). During the same period, a total of 3,462 acres of all types of habitat was acquired for waterfowl in the three prairie pothole states by the U.S. Fish and Wildlife Service. In other words, the federal Agricultural Conservation Program removed a little more than 74 times as many acres of wetlands as were acquired by the Federal Government for waterfowl purposes. Farm drainage is continuing. In North Dakota, South Dakota, and Minnesota, drainage increased sharply in 1958 over the average of the three preceding years (Seaton, 1959:391). An estimated 10,000 potholes were drained in this single year. Under existing governmental guidelines, Morgan (1960:8) estimates that eventually 90 per cent of the wet areas of the region will be lost through federally subsidized drainage.

How many years it will take to destroy the remaining breeding habitat is unknown. However, one thing is certain. The technology and horsepower are available to accomplish the task. Drainage and land leveling are now perfected land improvement techniques. Modern machinery has provided landowners with additional time and the means to convert their wet depressions to cropland. For example, one farmer using a three-bottom, 16-inch tractor plow cutting 48 inches and traveling at 3¼ miles per hour, can plow approximately 13 acres in 8 hours of running time. This is about five times the acreage plowed in a day in the 1920's by one man using three horses.

In Canada, both draining and filling of duck breeding habitat, although still in early stages of development, are growing in importance (Hawkins and Jahn, 1960; Moulding, 1960; L. B. Keith, pers. comm., 1960). In certain provinces, governmental assistance is provided for draining and clearing land for crop production (Hopkins, 1952:212).

Various approaches continue to be used to preserve essential duck and coot breeding sites. Some suitable habitat is provided indirectly as small water areas are established, largely to provide livestock with water. In Canada, neither the Canadian Wildlife Service nor the the provincial game branches own any pothole-type habitat. Lack of funds limits their programs. As mentioned previously, some wetland surveys are being planned or have been initiated recently to define more clearly the preservation task.

Two agencies working in Canada have provided duck and coot breeding habitat. Since the Prairie Farm Rehabilitation Act was passed in 1935, the Canadian government has constructed over 56,000 small water areas, primarily to provide water for farm purposes. Secondarily, a small proportion of these areas accommodate breeding ducks. Ducks Unlimited has made some of the most important contributions to the preservation and development of lands for waterfowl. Between initiation of the work in 1938 and 1 March 1960, development has been carried out on 519 projects comprising 788,000 acres of water and having 4,457 miles of shoreline (W. B. Leitch, pers. comm., 1960). Ducks Unlimited owns no land. All projects are established by securing flood easements from landowners.

In the United States, individual landowners carry out practices that add as well as subtract duck breeding habitat. Additions occur primarily as incidental benefits on lands modified to provide water for livestock and the irrigation of crops. In natural grassland areas used mainly for grazing, livestock ponds, in some cases, provide new homes for breeding ducks. However, annual production of ducks per square mile averages 10 to 15 ducklings in the stock pond region of western North Dakota, South Dakota, and eastern Montana, compared to 100 to 150 in good prairie pothole country (U.S. Fish and Wildlife Service, 1953:7). While these additions of duck breeding habitat are of some value, they neither replace the millions of top quality acres already lost, nor do they compensate entirely for the potholes now being destroyed.

Extensive efforts through legislative, educational, and voluntary avenues of approach have been made in the United States to save the potholes from destruction. Attempts to pass bills in the 86th Congress to halt government technical assistance and cost sharing for farm drainage harmful to wildlife, especially breeding waterfowl, failed to make substantial progress. That congressional action is required to change the policy of the Department of Agriculture is clear. Since 1956, Congress has declared that no conservation practice may be dropped by anyone, except the county committees of the Agricultural Stabilization and Conservation Program. This is truly a grass roots type of program. Since the rate of drainage increased between 1956 and 1958, it is evident that in the pothole region the county committees did not abandon or reduce drainage programs.

Another attempt to maintain potholes was advanced in May of 1960. A Memorandum of Agreement between the Bureau of Sport Fisheries and Wildlife, the Soil Conservation Service, and the Agricultural Conservation Program, provides for cooperation between the three agencies in reviewing wildlife values on lands for which farmers have requested cost sharing for drainage in designated pothole counties in Minnesota, North Dakota, and South Dakota. Established procedures permit wildlife technicians to advise the landowners of wildlife values on the lands, alternatives for management, and the existing government programs of land purchase and lease for wildlife. However, it must be clearly recognized that the county committees have final authority for approval or disapproval of cost sharing on drainage applications.

To save a portion of the potholes, government programs of land acquisition have been expanded in recent years. "Save The Wetlands" committees in the Dakotas and Minnesota have energetically brought the story to the public since the mid-1950's and have helped secure limited donations of money for wetland preservation. In these three states, 221,718

acres of waterfowl habitat were purchased between 1940 and 30 June 1960, under the Pittman-Robertson Federal Aid in Wildlife Restoration Act. A little less than 100,000 acres of this total are prime waterfowl breeding habitat. Insufficient funds continue to hamper the state acquisition programs.

An important step to accelerate the federal acquisition program was initiated in 1958. An amendment to the federal Migratory Bird Hunting Stamp Act raised the price of the Duck Stamp from $2.00 to $3.00, and designated that, beginning 1 July 1960, all of the receipts from the sale of stamps, less the cost of printing and distribution, should be spent to acquire lands for waterfowl. Many states, through their Flyway Councils, are enthusiastically urging the Bureau of Sports Fisheries and Wildlife to spend the bulk of the money for preservation of breeding habitat. To date, three federal waterfowl production habitat acquisition stations have been established in North and South Dakota. This program, in its initial phases, consists of securing good quality, duck-producing units through a combination of purchase and easement. A duck production unit consists of a number of temporary water depressions surrounding a more permanent water area required for rearing broods. Availability of experienced personnel now limits expansion of this approach to habitat preservation. Only time will tell how many production units will be saved from drainage. One thing is certain. It will be a tough race, since the rate of drainage has been increasing.

Certain key waterfowl production centers in the nonpothole type habitat are also being threatened by activities of man. Protection of the breeding grounds of the Blue and Snow Geese on the southwest side of Baffin Island became an urgent matter as a result of keen interest recently shown in the mineral resources of that general region (Munro, 1957:10). This area supports one of the world's most important goose colonies, with about 500,000 birds involved. Interest centered around intensive mineral exploration and exploitation of iron ore through open pit mining. Such activities would seriously disturb the geese. Open pit mining would consume space used by the birds and would convert breeding habitat to unsuitable types. The problem has been successfully met by establishing two types of reserved areas. Within a 500-square-mile area containing the heart of the colony of geese, industrial activities and hunting are strictly prohibited. This area is known as the Bowman Bay Game Sanctuary. Surrounding it is the 3,150-square-mile Dewey Soper Bird Sanctuary which serves as a sort of buffer zone. Hunting is prohibited, prospecting may be allowed under permit from the Canadian Wildlife Service, and mining development may be permitted, providing adequate steps are taken to prevent undue disturbance of the geese.

Thus, we see that man is destroying or threatening to destroy a large part of the most productive waterfowl breeding grounds. From goose breeding concentrations in the northern tundra to the more southerly prairie production centers of ducks and coots, individuals or small groups of people are attempting to convert the prime breeding habitat to other land uses. To protect one of the world's largest breeding colonies of geese, regulations have been adopted which restrict individual action for the purpose of aiding the larger public welfare. In our modern society, such procedures are not new.

Some approach, in addition to governmental acquisition, appears necessary to save a large part of the prairie pothole type duck and coot breeding habitat. Farmers now own and occupy the bulk of the area. Soils in the bottom of many potholes are capable of producing crops. In the United States, much of the cropland matrix in which the potholes exist should be converted to grassland to reduce wind and water erosion and provide a more stable agricultural economy (Kimball, 1953; Clawson, Held, and Stoddard, 1960:460). If converted to grazing land, many of the potholes would furnish water for

livestock as a part of improved range management. How to bring about this conversion is the challenge now facing citizens. One suggestion is to establish a mixed federal-state-private corporation to buy, develop, and manage grazing land (Clawson, 1958). Time provides the base on which to measure the success of the various attempts used to maintain the essential breeding habitat. But we must recognize that time to preserve the potholes is rapidly decreasing.

Migration and Wintering Habitat.—This discussion of migration and wintering habitat centers on the United States, for it is here that the greatest pressures are on the land at this time. There is no immediate need to consider the status of habitat in Canada and south of the United States in detail. Generally, the status of migration habitat is in a healthy condition in Canada. From the United States-Mexico border to northern South America the majority of the wintering areas, despite some local reductions in carrying capacity, can still accommodate more waterfowl than now use them (Hawkins *et al.*, 1958).

In the United States, maintenance and development of migration and wintering areas for waterfowl are carried out by private interests and governmental agencies. The combination of these efforts contribute toward providing suitable habitat to enhance the distribution and survival of waterfowl and to increase or maintain recreational opportunities.

Private Management. Actions of private interests to benefit waterfowl are much larger in scope than is commonly realized. In the Mississippi Flyway, at least 75 per cent of the nearly 10 million acres of waterfowl habitat under some form of management is privately controlled (Hawkins *et al.*, 1958). In the four states of Illinois, Missouri, Arkansas, and Louisiana, clubs control approximately 3,200,000 acres (Hawkins *et al.*, 1960:17). More than 800 duck clubs control 200,000 acres of land in California (Scheffer, 1959:238). Increased numbers of private landowners in the Pacific Flyway are showing interest in developing and managing lands for waterfowl through plans provided by technicians of the Soil Conservation Service.

Experiences of some of these clubs clearly demonstrate that intensive management aimed at providing preferred feeding and resting areas results in high duck-use. For example, a single duck club in Illinois and another in Arkansas have at one time held close to one-fifth of the Mississippi Flyway's Mallard population (Hawkins *et al.*, 1960:18). While such large concentrations of Mallards reduce the possibilities of having the birds widely distributed, they very vividly demonstrate the capabilities of privately managed areas to accommodate ducks.

Throughout the country, the incentive of securing shooting opportunities has resulted in the management of millions of acres of habitat for waterfowl. In addition, between 1935 and 1 July 1959, a total of 994,000 farm ponds had been constructed with government aid (U.S. Soil Conservation Service, 1960). When the hunting season closes, these private areas benefit ducks and geese. As hunting pressure increases in the future, more acreage will probably be developed by private interests. Such efforts will provide recreational opportunities for people and living space for waterfowl.

Government Management. As in the breeding grounds, conflicting land- and water-use programs are affecting waterfowl migration and wintering habitat. Draining, filling, and flooding have been and are taking place on an extensive scale to modify wetlands for agriculture, navigation, power, industry, and real estate. In this process prime aquatic habitat is destroyed. Studies indicate that approximately one-third of the natural wetlands in this country have been lost (Shaw and Fredine, 1956:7). In natural lakes and streams, aquatic foods, although enhanced in some cases, have generally been reduced by pollution, siltation, and chemical treatments to improve boating and swimming facilities. Con-

servation organizations are attempting to offset these losses by acquiring lands and working cooperatively with other agencies, such as the Corps of Engineers and Bureau of Reclamation, to mitigate the harmful effects of water development projects and to improve habitat for wildlife.

Federal and state governments started acquiring habitat for waterfowl in the early 1900's. Their efforts were formalized into a specific goal in 1934. A minimum of 12,500,000 acres of land managed primarily for waterfowl was believed needed. With approximately 3,300,000 acres obtained by 1 January 1957, the U.S. Fish and Wildlife Service still has to acquire a little over 4,000,000 acres to reach its share of the objective, or a total of 7,500,000 acres (Select Committee on National Water Resources, 1960:52). Ultimately the Service hopes to have an important waterfowl refuge every 200 miles along the north-south axis of each of the four flyways.

States, with approximately 1,450,000 acres of land for waterfowl, need to secure an additional 3,550,000 acres to meet their minimum objective of 5,000,000 acres. Obtaining the remaining acreage is becoming a more difficult task. There are fewer willing sellers (Jorgensen, 1957:4). Land prices are increasing, and some local governments oppose removal of more land from the tax rolls.

In addition to these acquisition efforts, much has been accomplished in establishing and improving federal policies and programs designed to replace and develop waterfowl habitat as a part of the nation's military and water resources programs. Legislation enacted in 1958 and 1960 advanced the opportunities for developing migration and wintering areas through inter-agency cooperation. One important new feature is that federal construction agencies now have the authority to incorporate fish and wildlife conservation and enhancement features into project planning, including the acquisition of additional lands to benefit fish and wildlife. Possibilities for developing waterfowl habitat under these new provisions are only starting to be realized. Plans on one project, the Army Corps of Engineers' navigation project on the Tombigbee River in Alabama, call for acquisition of land for the new Choctaw National Wildlife Refuge. This is the first instance where land will be purchased for wildlife at the site of a federal public works project, under the terms of the new 1958 legislation. Similar possibilities seem certain in the future. It is expected that reservoirs will double in area from 10,000,000 acres in 1950 to 20,000,000 acres by 2000 (Clawson, Held, and Stoddard, 1960:442). This expansion program deserves close attention. Potentially, tremendous opportunities exist for benefiting waterfowl and for providing public recreational opportunities.

Another cooperative endeavor that could provide aquatic habitat is the small watershed program which was established in 1954. Through cooperative efforts of the Soil Conservation Service, Forest Service, Fish and Wildlife Service, Soil Conservation Districts, and local watershed associations, features benefiting wildlife can be worked into the over-all watershed plan for proper soil and water management. Federal cost sharing is available for project modifications benefiting wildlife. Potentially, benefits to waterfowl could be considerable. However, local sponsoring groups have used the provisions relating to wildlife very little (Select Committee on National Water Resources, 1960:35). In fact, in Minnesota, anticipated losses of existing wildlife habitat would be great within the boundaries of some watershed proposals (Vesall, 1955:4).

A third cooperative measure, established in 1960, provides for development of suitable environments for fish and wildlife on property controlled by the U.S. Armed Forces. Provisions permit state wildlife agencies and administering officers of bases to provide public hunting and fishing on military reservations, using funds from service fees to improve the areas for these activities. Some habitat will be managed for waterfowl.

For a more detailed account of resources programs affecting waterfowl habitat, see the excellent bulletin issued by a select committee of the United States Senate (Select Committee on National Water Resources, 1960).

In summary, progress, although slower than desired, is being made to maintain and develop migration and wintering habitat in the United States. Private interests are managing significant acreages of top quality habitat. Future opportunities for developing migration and wintering habitat appear good, especially in conjunction with federal public works water development projects and on military lands. Nevertheless, under anticipated future intensive use of land and water, losses in suitable acreage are expected to exceed gains. Hope for accommodating large numbers of waterfowl on lesser acreage rests on the fact that the birds will concentrate on specific areas in spring, fall, and winter. Experience definitely shows that on intensively managed areas, large numbers of waterfowl can be accommodated, although the distribution of the birds is more restricted.

POPULATION MANAGEMENT

Waterfowl population management consists primarily of gearing the annual harvest to the yearly surplus and minimizing losses due to causes other than hunting. Objectives of the program include maintaining a widely distributed population of waterfowl at a sufficiently high level to provide both hunters and nonhunters with recreational opportunities on a sustained basis without causing undue hardships to agricultural and other interests. Investigations and management experiences have contributed substantially toward developing the base of information required to satisfy the goals. Some recent advances involving research, regulations, and depredations-control have been especially noteworthy.

Research.—In recent years investigations have covered broad geographic areas through cooperative undertakings. Generally, Canadian and United States federal wildlife agencies have provided leadership and materials. States and provinces, through their Flyway Councils, have contributed manpower, equipment, and funds. Other private organizations, such as Ducks Unlimited, and certain educational institutions, participated in a manner similar to that of the states. The Wildlife Management Institute, North American Wildlife Foundation, and National Wildlife Federation encouraged the investigations and contributed to them. Through combined efforts of these groups, population appraisals, banding, harvest studies, and depredation surveys have been intensified in Canada and the United States. One of the most significant results has been the development of a system to collect wings from ducks bagged by hunters in the United States. Species composition of the kill, age ratios to check on reproductive success, and other characteristics of the kill have been obtained from the wings. Partnership surveys definitely appear to be the most effective means for securing adequate population information over the broad geographic range covered by waterfowl.

Regulations.—One of the important advances in regulations has involved protection of Canvasbacks and Redheads. These over-water nesters were particularly hard hit by drought on the breeding grounds in the late 1950's. Recovery of the emergent aquatic nesting cover in 1960 was, in many areas of the prime breeding range, excellent. With normal water conditions, it is anticipated that nesting cover will be ideal in the spring of 1961. To provide for rapid recovery of Canvasback and Redhead populations, the U.S. Bureau of Sports Fisheries and Wildlife, with support from the Flyway Councils, closed the season on these two species in 1960 in an attempt to return as many of the birds as possible to the breeding grounds in 1961 (Janzen, 1960:2). Another step, which some people believe should already be employed to prevent waste, is to close the key Redhead and Canvasback concentration sites to all waterfowl hunting. This action would eliminate

the kill which takes place as a result of the hunter's inability to identify species in flight.

Another significant regulation of 1960 which advanced species management involved the Canada Geese of the Mississippi Valley, specifically those that winter primarily in southern Illinois and adjacent areas. This population is well known for the excessive kill it suffered in the mid-1940's. Attempts are now being made to manage it on a state quota basis to provide maximum sustained public recreational opportunities. To insure a large nucleus of breeders and to permit recovery of the declining flock, a kill quota was established in 1960 for certain counties within the two states where a large portion of the annual harvest takes place. Wisconsin's share was set at 7,000 and Illinois' at 14,000. This action recognizes the fact that the size of a flyway or species population depends upon the sum of the birds in each subpopulation or flock. Regulations aimed at maintaining or increasing separate flocks is definitely a forward step toward improving population management. As long as wintering grounds are adequate, limiting hunting mortality on each of the separate flocks appears to be the most effective way to permit Canada Geese to increase and fully utilize their remote and stable breeding grounds. Sportsmen in Wisconsin and Illinois are to be congratulated for accepting the required restrictive regulations with very few complaints.

Depredations Control.—Grain-eating Mallards and Pintails continue to offend Canadian wheat farmers by consuming and trampling large quantities of grain. Crop losses are substantial in some years. In 1955, estimates indicated that losses totaled $10,500,000 in Saskatchewan (Elkins, 1957:1). These depredations constitute a barrier which threatens to block preservation of the highly productive duck and coot breeding grounds in the agricultural parts of Canada (Leitch, 1960:18). Farmers suffering damage generally consider ducks more a pest than anything else. Unfortunately, all species of ducks suffer from adverse attitudes and activities of farmers caused by two upland feeding species, namely the Mallard and Pintail.

Cooperative investigations have been conducted in Canada during the past few years to determine the characteristics of the depredation problem and to test various control measures. The most important control measure tried was the automatic acetylene exploder, which prevented duck depredations on small parcels of land (Stephen, 1959:1). Trials were conducted in September of 1960 to determine whether or not the exploders would also prevent damage on a large block of cropland.

In addition to these tests, other attempts to deal with the problem have been tried. Scaring and herding techniques have been used. Permits have been issued to shoot in unharvested crop fields. In the Province of Saskatchewan, insurance is available to farmers to protect them against crop losses caused by wildlife. In Manitoba, a feeding program was tried, with some success, near the Delta marshes. These methods have helped meet the problem in some areas. However, additional solutions are required to resolve more fully the conflict between grain-feeding ducks and farmers. What is needed is a preventive or compensatory plan that will operate continuously over a broad geographic area, regardless of weather and road conditions.

In the Pacific Flyway, especially California, crop damage by the Mallard, Pintail, American Widgeon, and coot was severe in some localities. The most effective measure in controlling depredations here was the development of strategically located feeding, watering, and resting areas (Lostetter, 1960:102).

FUTURE NEEDS

The major immediate needs to conserve waterfowl are known. Prairie pothole type breeding habitat must be preserved, especially on the Canadian prairie. Crop depreda-

tions must be controlled. Hunting mortality must continue to be regulated in relation to the status of populations, particularly for individual species and manageable flocks.

With the expansion of human population, solutions to these problems will become increasingly more challenging. Greater public understanding and support, adequate financing, and a continuous flow of factual information will be required to permit courageous and imaginative leaders to guide and improve waterfowl management within the anticipated future environmental conditions.

That a large segment of the public does not now recognize the need for immediate action to preserve habitat seems obvious. In the 1959–60 post-hunting season sale of Duck Stamps, only 1,153 stamps were sold up to mid-May 1960. This special sale was held to permit interested citizens to contribute to the essential land acquisition fund. With over two million waterfowl hunters and a much larger group of interested non-hunters, it is apparent that financial support from this special effort was meager. However, public understanding undoubtedly increased somewhat.

Behavioral characteristics of waterfowl help to maintain public apathy. Large concentrations occur during migration and on the wintering grounds. Locally, the birds are abundant. Apparently, what few people realize is that many times they are seeing a large percentage of a given species or manageable flock. Similarly, local shooting success may be high due to exceptional food, water, and hunting conditions. When personal sightseeing and hunting success is high, how many people will purchase an extra Duck Stamp to enlarge the habitat preservation fund? Apparently few.

In addition to supporting programs, the public must clearly recognize the need for changing the broad U.S. Congressional policy encouraging drainage. Technical aids and payments from the government for draining marshes of value to waterfowl should be denied in the Prairie Pothole Region. This action is essential to maintain the type of habitat required to produce a resource that is largely in the public interest.

Because of the magnitude and importance of the breeding habitat and crop depredation problem in Canada, international action is being considered to meet the issues. A Waterfowl Study Committee of the International Association of Game, Fish, and Conservation Commissioners has been evaluating and is continuing to evaluate the need and desirability of establishing an International Waterfowl Advisory Committee or Commission to help resolve the conflicts in land use.

Action on the major waterfowl conservation issues is needed **now.** With proper public support and management, particularly on migration and wintering areas, the numbers of geese, especially Canadas, can very likely be enlarged. Lack of practical solutions to preserve the potholes will result in a reduction in the volume of the duck and coot flight. Extirpation of species is not involved. Rather, the challenge is to maintain a reasonable volume of waterfowl to meet present and expanding future demands of the public.

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